

<b>Notice of Allowability</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/039,612	DAVID, HOWARD S.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Zhuo H Li	2186	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**  
All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to August 26, 2004.
2. ☒ The allowed claim(s) is/are 1,3-6,8-10 and 12-15.
3. ☒ The drawings filed on 31 December 2001 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

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|--|--|
| <ol style="list-style-type: none"> <li>1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)</li> <li>2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</li> <li>3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),<br/>Paper No./Mail Date _____</li> <li>4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br/>of Biological Material</li> </ol> | <ol style="list-style-type: none"> <li>5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)</li> <li>6. <input type="checkbox"/> Interview Summary (PTO-413),<br/>Paper No./Mail Date _____</li> <li>7. <input type="checkbox"/> Examiner's Amendment/Comment</li> <li>8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance</li> <li>9. <input type="checkbox"/> Other _____</li> </ol> |
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### EXAMINER'S STATEMENT OF REASONS FOR ALLOWANCE

1. Claims 1, 3-6, 8-10 and 12-15 are allowed.
2. The following is an examiner's statement of reasons for allowance:

Applicant's invention is draw to an apparatus for performing memory read/write from plurality of memory modules in order to allow the utilization of excess DRAM interconnect bandwidth while preserving limited memory bus bandwidth (i.e., a plurality of memory tags are resided in the memory controller, and the data cache and associated logic are located in one or more buffer components on each of the memory modules wherein each tag address storage location in the array of tag address storage locations corresponding to a cache line with the cache line size, the cache line in one of an unsegmented state and a segmented state in which the size of the cache line is one half of the cache line size in the unsegmented state, and the count of tag address storage locations is invariant between the unsegmented state of the cache line and the segmented state of the cache line).

Applicant's independent claims 1, 6 and 10 each recites, *inter alia*, the memory controller (202) with a structure defined in the specification (pages 4-10) comprising an array of tag address storage locations (340-360 and 400) having a count, and a command sequencer and serializer unit (380) coupled to the array of tag address locations, the memory module coupled to the command sequencer and serialize via a memory bus, each tag address storage location in the array of tag address storage locations corresponding to a cache line, the cache line having a cache line size, the cache line in one of an unsegmented state and segmented state in which the

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size of the cache line is one half of the cache line size in the unsegmented state, and further wherein the count of tag address storage locations is invariant between the unsegmented state of the cache line and the segmented state of the cache line. Applicant's invention of the claims 1, 6 and 10 comprises a particular combination of elements, which is neither taught nor suggested by the prior art.

Accordingly, Applicant's claims are allowed for these reasons and for the reasons recited by Applicant's amendments filed on 12/31/2003 and 08/26/2004.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zhuo H Li whose telephone number is 571-272-4183. The examiner can normally be reached on Tue-Fri 8:00 a.m. to 5:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Kim can be reached on 571-272-4182. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.


Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Zhuo H. Li   
Art Unit 2186

November 5, 2004

  
MATTHEW ANDERSON  
PRIMARY EXAMINER  
GROUP 2100